A B S T R A C T

A semiconductor optical device has a semiconductor substrate, and an active layer which is formed above the semiconductor substrate, the active layer having a plurality of quantum wells formed from a plurality of barrier layers and a plurality of well layers sandwiched among the plurality of barrier layers. At least one well layer of the plurality of well layers is formed from an $In_{xa}Ga_{(1-xa)}As$ film, and a composition ratio xa of the In takes any one value within a range from approximately 0.05 to approximately 0.20. Accordingly, the semiconductor optical device is formed as a strained well layer in which lattice distortion bought about in the well layer takes any one value within a range from approximately 0.35% to approximately 1.5%, and the strained well layer is formed so as to have a bandgap wavelength different from those of the other well layers. Consequently, the semiconductor optical device is configured capable of representing, as an optical spectral characteristic, a broad optical spectral characteristic whose center wavelength is from approximately 800 nm to approximately 850 nm, and which has a spectral half bandwidth greater than or equal to a predetermined value.